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The Kettle Range of the Great Lake District of North America. By T. C. Chamberlin, State Geologist of Wisconsin. 8vo, pp. 20, with map. Paris, 1878.

Note sur le Grès de Bagnoles (Orne). Par M. J. Moriere. 8vo, pp. 15, with plate. Caen, 1878. From the author.

"La Carte Geologique de la Suède" et ses envois a l'Exposition Universelle de Paris en 1878, avec une description succincte des Formations Geologiques de la Suède. 8vo, pp. 57. Stockholm, 1878.

Intorno alla Balena presa in Taranto nel Febbrajo, 1877. Memoria del Dr. Francesco Gasco. 4to, pp. 47, with plates. Naples, 1878. From the author.

Palæontological Bulletin, No. 30. Contribution to the Vertebrate Fauna of the Miocene of Oregon. By E. D. Cope. (Read before the Am. Philos. Society, Nov. 15, 1878.) 8vo, pp. 16. From the author.

Note sur un nouveau genre de reptile de la Famille des Geckotiens; and Sur un Eleotris d'espece nouvelle par Al. Thonnot. (Ext. du Bull. de la Soc. Philomath. de Paris, 27 Juillet 1878.) 8vo, pp. 3. From the author.

Recent and Fossil Cephalopoda. By Miss Agnes Crane. (Ext. from the Geolog. Mag., Nov., 1878.) 8vo, pp. 13. From the authoress.

Noticias sobre Antigüedades Indias de la Buia Oriental. Par Florentino Ameghino. Com 3 láminas fotograficas representando objetos de piedra de la edad neolítica. 12mo, pp. 26. Mercedes, Argentine Republic, S. A., 1877. From the author.

La Barcenita. Documentos relativos al descubrimiento des esta nueva especie Mineral dedicada al Sr. D. Mariano Barcena de Mexico. Por el Dr. J. W. Mallet. 8vo, pp. 16. Mexico, 1878. From the author.

The Law governing Sex. Verbal communication of Thos. Meehan to the Acad. of Nat. Sciences of Philadelphia, June 4, 1878. 8vo, pp. 3. From the author.

Note sur le Grès de Bagnoles (Orne). Par M. J. Moriere. 8vo, pp. 15, 1 plate. Caen, 1878. From the author.

Catalogue des Mammifères Vivants et Fossiles. Par le D. E-L. Trouessart. Advertissment. (Ext. Revue et Magazin de Zoologie. 1878, Juin.) 8vo, pp. 16. From the author.

Tenth Annual Report of the U. S. Geological and Geographical Survey of the Territories, embracing parts of Colorado and adjacent Territories, being a report of progress for the year 1878. By F. V. Hayden, U. S. Geologist. Washington, Dec. 15th, 1878, pp. 546.

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## GENERAL NOTES.

### BOTANY.

ASSOCIATION OF AN INCONSPICUOUS COROLLA WITH PROTEROGYN-  
OUS DICHOGAMY IN INSECT-FERTILIZED FLOWERS.—Mr. A. S. Wilson,  
at the last meeting of the British association, read a paper on this sub-  
ject. He said that there is a class of flowers represented by the com-  
mon figwort (*Schrophularia nodosa*) which are shown, by their se-  
creting nectar and emitting odors, to be dependant on the visits  
of insects for their fertilization, and not on the wind, and yet do  
not possess a conspicuous colored or marked corolla for the guid-  
ance of insects to the flowers. Moreover, the flowers are in them  
not massed together to gain additional conspicuousness, as in highly  
colored flowers, like heaths, foxgloves, gladiolus, etc. Highly  
colored conspicuous flowers are usually proteranous, *i. e.*  
the anthers are matured before the stigma, and as flowers are usu-  
ally developed from below upwards, it follows that in any given  
plant the lower flowers will have shed their pollen and have their

stigmas ready to receive it by the time the upper flowers are beginning to shed their pollen. In this inconspicuous class, on the other hand, the lower flowers will be in the second or male stage when the upper flowers are as yet in the younger or female stage. Now it is clear that an insect visiting such flowers, must adhere to the habit of the bee, which invariably begins at the lower flower on a stalk and goes upwards, taking each flower in regular succession. By this means it invariably enters first a female flower and there deposits the pollen it brings with it from another plant. Were the bee to reverse this order, the whole elaborate arrangements of many plants for cross-fertilization would be upset, for the bee would simply transfer pollen from the upper male flowers and deposit it on the lower female ones. This would be fertilization by flowers of the same plant, and this Mr. Darwin has shown to be little or no better than self-fertilization. In the case of the inconspicuous flowers, where the opposite condition obtains, a bee would frustrate fertilization by adhering to its ordinary ascending habit. Mr. Wilson's observations of a wasp visiting these plants indicate that the wasp begins at the top flower and proceeds downwards—so that they are adapted specially to such insects, and as wasps are generally predatory in their habits, and not entirely vegetable feeders, as bees are, it is probable that, like other carnivorous creatures, their perceptions of vision and scent are keener; hence wasps can probably find these obscure flowers quite as easily as a bee can a highly-colored one. The plant, therefore, finds that the material can be more economically utilized than in the production of a colored corolla just as in the case of self-fertile cleistogamic flowers.

BOTANICAL NEWS.—At the last meeting of the British Association Mr. A. S. Wilson read some notes on dimorphic plants. The plants referred to in this paper were *Erythraea centaurium*, which appears from a microscopic examination of the pollen to be a dimorphic plant like the primrose or bog-bean; and *Silene acaulis*, which presents three forms—a male, having stamens only, a female, with rudimentary stamens and perfect pistils, and a perfect hermaphrodite form, having both complete. In this respect it resembles *S. inflata*, which, according to Axell, is triœciously polygamous.

Mr. Wilson also remarked on "Some Mechanical Arrangements Subservient Cross-Fertilization of Plants by Insects." This paper had reference to the three plants, *Vinca minor*, *Pinguicula vulgaris*, and foxglove—and was a description of latch-like arrangements in the latter two, and a knee-shaped bend in the first, which when depressed by an insect entering the flowers, cause the pollen to be deposited on the insect, and, in the case of *Vinca*, to smear the pollen with viscid matter from the circumference of the curiously-shaped disc forming the lower part of the stigma.

Dr. Bayley Balfour referred to certain peculiarities in the struc-

ture of the *Naiidaceæ*. He especially described the arrangement of leaves in the genus *Helophila*. In this marine tropical phnæogam, the stem is a creeping jointed rhizoma; at each joint occurs a pair of sheathing scale leaves. No foliage leaves occur on the main axis. In the axil of one scale leaf of each pair arises eccentrically a lateral secondary shoot, which is a jointed rhizoma like the parent, and the first pair of leaves upon it is a pair of foliage leaves, the succeeding leaves on this axis are all scale leaves. From these secondary axes tertiary ones arise, which again repeat the process. Thus the foliage leaves in these plants only occur as the first pair of leaves on the lateral shoots. This is probably unique in the vegetable kingdom. The homologies of the parts of the male and female flowers were also pointed out.

The *Bulletin* of the Torrey Botanical Club for October (which was late in coming) contains several notes by Messrs. Eaton, Underwood and Gilbert, on the ferns of the United States.

In the *Botanical Gazette* for November, Fendler's Ferns of Trinidad are noticed by Prof. Eaton. The leaves of *Darlingtonia californica* and their two secretions are described by Mrs. R. M. Austin.

#### ZOÖLOGY.<sup>1</sup>

ON THE ORIGIN OF BILATERAL SYMMETRY AND THE NUMEROUS SEGMENTS OF THE SOFT RAYS OF FISHES.—As is well known, the soft fin-rays of *Acanthopterous* fishes and all or most of the fin-rays of *Malacopterygians*, are composed of two bilaterally symmetrical ossified and more or less completely segmented halves, semicircular in section, each having a groove on its inner face to receive between them a cartilaginous medulla. Their embryological history shows that the process of ossification is progressive from without inwards, or in the language of recent authorities it may be styled ectosteal.

Viewed in a non-teleological, or in the light of what seem to be the probable mechanical (dynamical) differentiating causes, their origin becomes extremely simple. No type of vertebrate limb has such exceedingly short and numerous segments in relation to its total length. In extreme contrast with them we may place the digital wing-elements of the *Chiroptera* and *Pterosauria*, and of these it may be said no vertebrate types exhibit such excessive elongation of the digital elements in proportion to their aggregate length. Contrasting their habitual modes of use in relation to their surroundings, we find the media, water and air, in which the two, respectively fins and wings, are used differ as widely in respect to density. That such difference in structure should accompany such widely differing conditions would seem to be caused by those conditions. Then, like those types which perambulate over approximate planes, there are no definite points of im-

<sup>1</sup>The departments of Ornithology and Mammalogy are conducted by Dr. ELLIOTT COVES, U. S. A.